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conclusion is reached that the seed deserves to be removed from *Cardiocarpus*, chiefly on account of its vascular structure, and therefore a new genus *Mitrospermum* is proposed. Whether the seed belongs to *Cordaites* or not was not determined, for the platysperm character can no longer be used as an indication of that group. Sections of unattached seeds must continue to be made, but there is far greater need of sections of attached seeds, for these will probably solve the puzzling embryo situation attributed to paleozoic seeds.—J. M. C.

Phototropism.—NORDHAUSEN¹⁵ offers more evidence against the lens theory of phototropic perception. He finds that leaves of *Begonia* with killed epidermis assume the normal light position, the palisade cells being the perceptive organs. He says that "the epidermis as well as its papillose character are not necessary for light perception." He finds a great difference between the sensitiveness of the two halves of the leaves of *Tropaeolum*, which renders them unsuitable for comparing the effect of light on the wet and dry halves. This plant and method have furnished HABERLANDT with his best evidences for the lens theory. After offering this significant evidence against the theory, he states that HABERLANDT'S reply to his former criticism has not rendered that criticism any less applicable. He also holds that the evidence offered in HABERLANDT'S later papers is not of a sufficiently critical nature to give the theory any support.—WILLIAM CROCKER.

Carbon dioxid as a fertilizer.—A Berlin company has placed a product on the market known as "Germanol," which consists of an earthy mixture containing about 18 per cent calcinated soda. The company attributes the virtue of this mixture to an increased porosity of the soil following an increase in the proportion of carbon dioxid. MITSCHERLICH,¹⁶ however, is of the opinion that if such a mixture has any value it must be attributed to the action of the carbon dioxid in increasing the solubility of various difficultly soluble soil substances. His comprehensive tests show that increasing the carbon dioxid content of the soil does not result in an increase of plant product; that there is always sufficient carbon dioxid in the soil to render mineral food available; that an increase in the carbon dioxid in the soil does increase the solubility of difficultly soluble substances, but that such increase is superfluous so far as any advantage to the plant is concerned.—RAYMOND H. POND.

Rhizophore of Selaginella.—WORSDELL¹⁷ has used an investigation of the rhizophore of *Selaginella* as the basis of a discussion of the ultimate morpho-

¹⁵ NORDHAUSEN, M., Ueber die Perzeption der Lichtsichtung durch die Blatt-spreite. Zeitschr. Bot. 2:465-506. 1910.

¹⁶ MITSCHERLICH, EILHARD ALFRED, Ein Beitrag zur Kohlensäuredüngung. Landwirtsch. Jahrb. 39:157-166. 1910.

¹⁷ WORSDELL, W. C., The rhizophore of *Selaginella*. New Phytol. 9:242-253. figs. 2. 1910.